
Rubiacearum Americanarum Magna Hama Pars X. New Species and a New Subspecies of *Faramea* (Coussareae) from Central and South America

Charlotte M. Taylor

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, U.S.A.
Charlotte.Taylor@mobot.org

ABSTRACT. Descriptions and illustrations are presented for the new species *Faramea accumulans* C. M. Taylor and *F. areolata* C. M. Taylor of the San Blas region of eastern Panama, *F. guaramacalensis* C. M. Taylor from cloud forests in northwestern Venezuela, and *F. longistipula* C. M. Taylor from montane forests in northwestern Colombia. The new subspecies *F. tamberlikiana* subsp. *sessifolia* (P. H. Allen) C. M. Taylor from southern Costa Rica represents the northernmost range extension of this species.

Key words: Coussareae, *Faramea*, neotropics, Rubiaceae.

During study of recent collections of *Faramea* Aublet from Central and South America for the *Flora Mesoamericana* and other projects, the following undescribed taxa were discovered. A summary of the morphology of *Faramea* has recently been presented (Taylor, 1999). This Neotropical genus of about 130 species is characterized by indehiscent, often leathery, blue to black fruits with a single rather thin-walled seed; the ovaries 1-locular or incompletely 2-locular with one or two basal ovules; and internally glabrous corollas with four valvate lobes. *Faramea* is similar to *Coussarea* Aublet; *Coussarea* is distinguished by its ovules inserted at the same point (vs. separately) and its vertical (vs. horizontal) seeds, and additionally usually by its inflorescences white (vs. green to blue) and its fruits white and spongy. *Faramea* has not been studied as a whole, but several floristic treatments have been presented, notably by Mueller (1881), Steyermark (1967, 1974), Burger and Taylor (1993), and Taylor (1999). Mueller recognized four sections within the genus, but subsequent authors have not used or expanded the infrageneric classification of *Faramea*.

Faramea is particularly well represented in wet lowland forests and montane forests, but it is found throughout a wide range of Neotropical habitats including pyrrhophytic vegetation (e.g., *F. crassifolia* Benth), gallery forests in savanna regions (e.g.,

F. sessilifolia (Kunth) DC.), seasonal Antillean forests (e.g., *F. occidentalis* (L.) A. Richard), and Atlantic forests from Brazil (e.g., *F. percyanea* Zahlbruckner) through Paraguay (e.g., *F. cyanea* Mueller Argoviensis). The reproductive biology of *Faramea* has not been studied in much detail. The fruits of *Faramea* species are fleshy and presumably dispersed by animals. The flowers of several species of *Faramea* are visited by butterflies (Bawa & Beach, 1983), and are fragrant and white or blue with the color usually consistent in a particular species. As in *Coussarea*, the corollas of some species apparently elongate markedly and rapidly just before anthesis, so measurements of flower buds are often not informative about size of the flowers at anthesis. The white flowers of several species (e.g., *F. occidentalis*, pers. obs., Puerto Rico) have an odor similar to that of gardenia, while the blue flowers (e.g., *F. multiflora* A. Richard ex DC., pers. obs., Costa Rica) have a sweeter and lighter fragrance. Blue flowers are uncommon in the Rubiaceae and not known in *Coussarea*. They have been considered derived in the family (Robbrecht, 1988) and thus are likely derived within *Faramea*. The flowers of many species of *Faramea* are distylous, but sometimes do not show the reciprocal placement of anthers and stigmas found in most Rubiaceae (e.g., Faivre & McDade, 2001): in several species (e.g., *F. guaramacalensis*, described below), the anthers occupy nearly the same position in the corolla tube in all flowers seen while the styles are markedly dimorphic, so that the stigmas of the short-styled flowers are positioned below the anthers and included (e.g., Fig. 2C), while those of the long-styled flowers are positioned at or just above the corolla throat.

Some morphological features of *Faramea* are unusual in the Rubiaceae and have been used by previous authors to characterize the genus, but are actually not found in all species and thus are distinctive but not diagnostic. These features include blue flowers (discussed above), stipule form,

leaf arrangement, leaf venation pattern, fruit shape, and calyx limb length.

The stipules are often described for *Faramea* (e.g., Steyermark, 1974) as interpetiolar, triangular, and aristate. The majority of species of *Faramea* do have this feature, and it allows recognition of this genus because the aristas of the stipules on the terminal bud typically cross each other at their bases and diverge at their apices in a manner found only in *Faramea*. However, some species of *Faramea* lack aristas on their triangular stipules (e.g., *F. flavicans* (Roemer & Schultes) Standley), while other species have the stipules completely fused into a calyprate structure that may have two short projections at the apex (e.g., *F. longistipula*, described below), may terminate in a single short arista (e.g., *F. calyprata* C. M. Taylor), or may lack any terminal projection (e.g., *F. parvibractea* Steyermark).

Another distinctive vegetative feature of *Faramea* is a distichous leaf arrangement; in the majority of Rubiaceae, including *Coussarea*, the leaves are decussate. However, the entire genus has not been surveyed in the field, and this character is not always evident on herbarium specimens. The leaves of many *Faramea* species have a distinctive venation pattern with one or more well-developed submarginal veins (e.g., *F. suerrensis* Donnell Smith, *F. exemplaris* Standley); however, the submarginal veins are only weakly developed in other species (e.g., *F. occidentalis*).

Similarly distinctive but not diagnostic are the strongly oblate (i.e., depressed-globose), laterally flattened fruits found in many *Faramea* species (e.g., *F. suerrensis*, *F. multiflora*), though the fruits of several *Faramea* species are ellipsoid to globose (e.g., *F. occidentalis*). Additionally, the calyx limb is usually rather short, truncate, and denticulate, but also may be rather well developed and even spathaceous to irregularly lobed (e.g., *F. cyathea* Standley, *F. macrocalyx* Mueller Argoviensis).

Other features that are particularly variable in *Faramea* are inflorescence position and arrangement. Inflorescence position varies from consistently terminal (e.g., *F. suerrensis*, *F. multiflora*), to variably axillary and/or terminal (e.g., *F. occidentalis*, *F. torquata* Mueller Argoviensis), to consistently axillary (e.g., *F. egregia* Sandwith, *F. maguirei* Steyermark, *F. guaramacalensis*). The inflorescences of some species are even supraaxillary, inserted 1 to several mm above the junction of the leaf and the stem (e.g., *F. spathacea* Mueller Argoviensis ex Standley, *F. guaramacalensis*); the developmental origin of this is not clear. As to inflorescence arrangement, *Faramea* shows nearly

the full range found in the Rubiaceae: from flowers solitary (e.g., *F. capulifolia* Dwyer), to few (e.g., *F. quinqueflora* Poeppig & Endlicher), to numerous (e.g., *F. multiflora*); from flowers sessile or subsessile (e.g., *F. maguirei*), to borne on well-developed peduncles and/or pedicels (e.g., *F. egregia*, *F. guaramacalensis*), to presenting all these conditions in a single species (e.g., *F. occidentalis*); from inflorescence bracts reduced (e.g., *F. guaramacalensis*), to well developed (e.g., *F. guianensis* Aublet) and sometimes even petaloid (e.g., *F. anisocalyx* Poeppig & Endlicher; Classen-Böckhoff, 1996); and from thyriform with several orders of branching (e.g., *F. multiflora*, *F. suerrensis*) to densely capitate (e.g., *F. papirifolia* (Steyermark) C. M. Taylor). Similarly extensive variation in inflorescence arrangement is found in several other genera of Rubiaceae, including *Coussarea*.

***Faramea accumulans* C. M. Taylor, sp. nov.**

TYPE: Panama. San Blas: vecindad de Río Diablo, frente a la Isla Nargana, a unos 15 km de la costa, 9°22'N, 78°35'W, 100–180 m, 2 July 1992, H. Herrera, B. Obladía, R. Obladía & N. Blanco 1198 (holotype, PMA; isotype, MO-5204021). Figure 1D.

Haec species a congeneris foliis elliptico-oblongis 28–44 cm longis basi cordulatis amplexicaulibus, inflorescentia cymosa axillari, pedicellis 5–12 mm longis, limbo calycino truncato ca. 3 mm longo atque fructu laevi oblato ca. 10 × 14 mm distinguitur.

Small trees to 5 m tall, glabrous. *Leaves* elliptic-oblong, 28–44 × 13–24 cm, at apex acute to shortly acuminate, at base shortly cordate and amplexicaul, drying chartaceous, adaxially shiny, abaxially matte; secondary veins 11 to 16 pairs, looping to interconnect forming an undulating submarginal vein, adaxially costa prominent and remaining venation plane, abaxially costa prominent and remaining venation plane to prominulous; petioles 0–3 mm long; *stipules* interpetiolar, persistent, main body deltoid, 9–12 mm long, abaxially smooth, at apex aristate with arista 5–6 mm long. *Inflorescences* axillary, cymose, 3–3.5 cm long, glabrous, ebracteate; peduncles 1 or 2 per axil; pedicels 5–12 mm long; flowers with hypanthium cylindrical to turbinate, ca. 1 mm long; calyx limb ca. 3 mm long, truncate, corolla in young bud glabrous externally, not seen at maturity; anthers and stigmas not seen. *Infructescences* similar to inflorescences; *fruits* oblate, ca. 10 × 14 mm, smooth, purple.

Distribution, habitat, and phenology. Wet forests at 50–180 m in northeastern Panama; collected

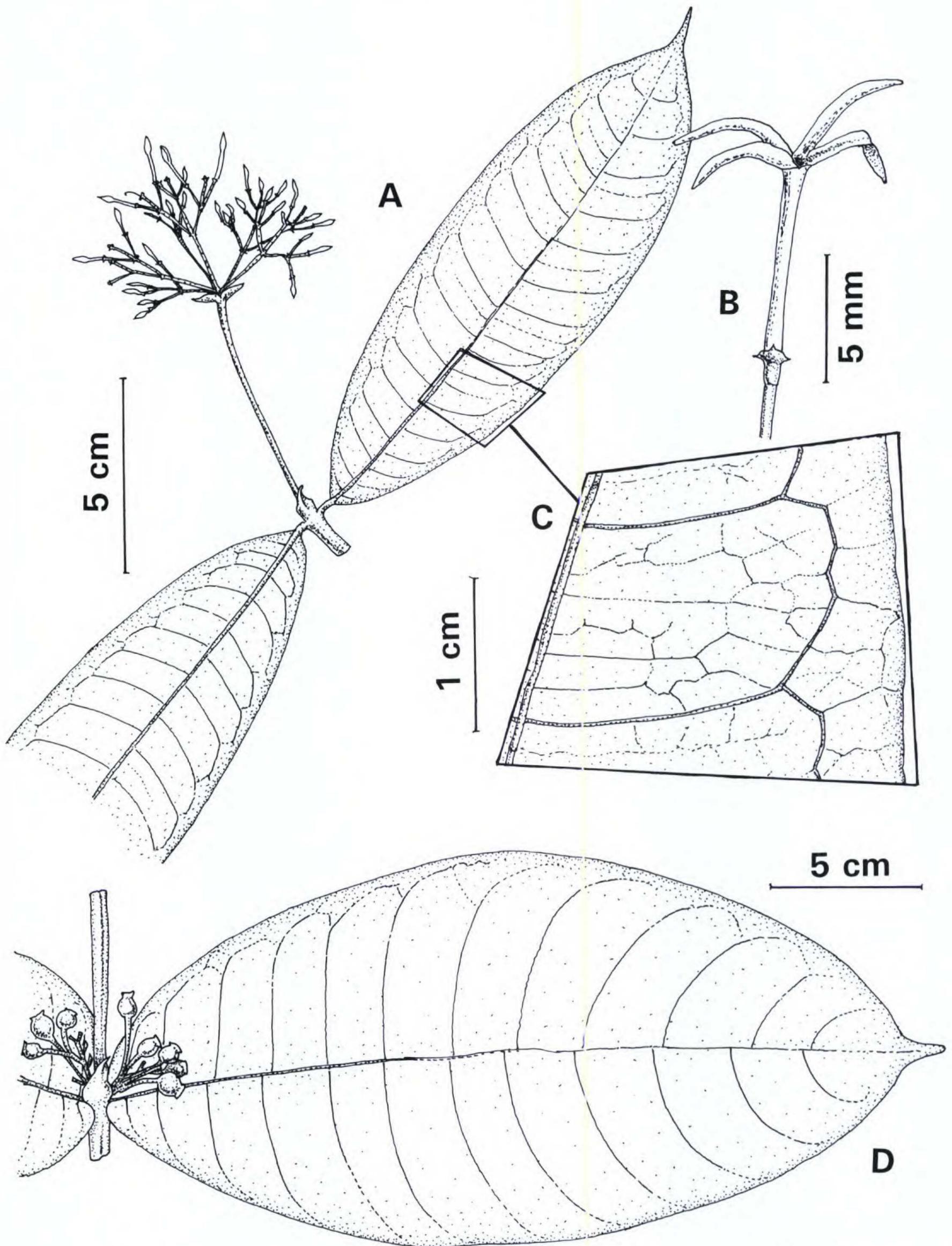


Figure 1. A–C. *Faramea areolata* C. M. Taylor. —A. Flowering branch. —B. Flower. —C. Detail of abaxial leaf surface, from costa (left) to leaf margin, showing venation pattern. —D. *Faramea accumulans* C. M. Taylor, part of branch with young infructescence. A, B, based on McDonagh *et al.* 172. C, based on de Nevers *et al.* 7343; D, based on H. Herrera *et al.* 1178.

with flowers in bud in July, with fruits in July and August.

This species apparently accumulates detritus in the clasping leaf bases that surround the stems, and the specific epithet refers to this habit. *Faramea accumulans* is similar to *F. correae* C. M. Taylor of central Panama; *F. correae* differs in its smaller leaves, 8–18 × 2.5–7 cm, and its fewer, sessile, terminal flowers. *Faramea accumulans* is also similar to *F. permagnifolia* Dwyer ex C. M. Taylor of southeastern Costa Rica; *F. permagnifolia* differs in its oblanceolate to obovate leaves that are rounded to truncate at the base and its fasciculate terminal flowers. *Faramea accumulans* is also similar to an unnamed species from northern Costa Rica and adjacent Nicaragua, which differs in its carinate calyces and fruits; and *F. accumulans* is similar to *F. cyathocalyx* Standley of northwestern Colombia, which differs in its fasciculate flowers and petiolate leaves that are acute to cuneate at the base.

Paratypes. PANAMA. **San Blas:** Cordillera frente a la Isla Narganá, Ribera de Río Diablo, *C. Galdames et al.* 1480 (MO, PMA); Río Diablo y vecindad de Duque Sui, a unos 10 km de la costa frente a la Isla de Narganá, ruta hacia Cerro Ibedón, *H. Herrera et al.* 1178 (MO, PMA); vecindad del Río Diablo, 8–9 km de la costa, *H. Herrera et al.* 1728 (MO, PMA).

Faramea areolata C. M. Taylor, sp. nov. TYPE: Panama. San Blas: Nusagandi and road to Cartí, 9°18'N, 78°58'W, 400 m, 18 July 1986, *J. F. McDonagh, B. A. Lewis, N. J. Gumpel & A. J. Plumtre* 172 (holotype, PMA; isotypes, BM-614523, MO-3622277). Figure 1A–C.

Haec species *Farameae eurycarpae* similis, sed ab ea foliis rigidioribus in sicco plumbeo-viridibus, inflorescentiae axibus secundariis verticillatis atque limbo calycino 0.5–0.8 mm longo distinguitur.

Shrubs or trees to 5 m tall, glabrous. *Leaves* elliptic-oblong to lanceolate, 8–19 × 2–8 cm, at apex acuminate with tips often well developed, at base cuneate to usually rounded, truncate, or occasionally shortly cordate, drying chartaceous, adaxially matte, usually shiny abaxially; secondary veins 8 to 13 pairs, looping to interconnect forming an undulate-angled, usually reticulating submarginal vein, adaxially and abaxially costa prominent and remaining venation reticulated and prominulous; petioles 3–7 mm long; *stipules* shortly to completely united around stem into a continuous sheath, caducous, main body of interpetiolar portion 5–7 mm long, abaxially smooth, at apex obtuse to broadly so, aristate with arista 2–5 mm long, inserted at or a little below apex. *Inflorescences* terminal, cymose, blue to white, glabrous; peduncles 2.5–6 cm long;

branched portion corymbiform, 5–11 × 5–9 cm; secondary axes 3 to 8, verticillate to subverticillate; bracts triangular, to 1.5 mm long; pedicels 2–7 mm long; *flowers* distylous; hypanthium ellipsoid to cylindrical, 1–1.5 mm long; calyx limb 0.5–0.8 mm long, denticulate; corolla salverform, blue, externally glabrous, tube 7–8 mm long, lobes narrowly triangular, 3–5 mm long, acute; anthers and stigmas not seen in good condition. *Infructescences* similar to inflorescences; *fruits* oblate, ca. 5 × 11 mm, laterally somewhat flattened, smooth, blue.

Distribution, habitat, and phenology. In wet forests and cloud forests at 200–800 m in central and eastern Panama; collected with flowers in January, March through September, and December, with fruits in January, April, June, July, and October through December.

This species has previously been confused with *Faramea eurycarpa* Donnell Smith (e.g., Dwyer, 1980), but *F. eurycarpa* differs in its leaves that dry papyraceous and usually yellow-green and its calyx limbs 1–3 mm long. The leaves of *F. areolata* in particular are notable in being shiny abaxially and having the submarginal veins rather angled and the higher order venation of both surfaces raised and arranged in distinctive angled areoles (Fig. 1C); the specific epithet refers to this distinctive venation. *Faramea areolata* is similar to *F. ampla* Standley of northwestern Colombia; *F. ampla* differs in its leaves that dry papyraceous, are cuneate to obtuse at the base, and have submarginal veins more smoothly undulating and little or not at all reticulated.

Due to the poor preservation of the flowers on the specimens seen, the exact position of the anthers at anthesis is not clear, but it appears to be generally the same in both short-styled and long-styled flowers while the stigma position differs.

Paratypes. PANAMA. **Colón:** ridge top leading N from Río Escandaloso towards Cerro Burja [sic], *Hammel* 2710 (MO); Santa Rita Ridge Road, 20–22 km from Transisthmica Highway, *Sytsma* 1325 (MO); ridge between Río Piedras and Río Gatún waterbeds, along trail from end of Santa Rita Ridge Road, ca. 5–8 km SW of Cerro Bruja, *Sytsma et al.* 4292 (MO). **Panamá:** Llano–Cartí road, 1 mi. past sawmill on dirt road, *T. Antonio* 2533 (MO); along newly cut road from El Llano to Cartí–Tupile, 12 mi. above Pan-Am Highway, *Croat* 22874 (MO), *Liesner* 1120 (MO); El Llano to Cartí Road, 14 km N of Panamerican Highway, *J. Folsom & Kauke* 1411 (MO), 14.9 km N of Panamerican Highway, *Folsom et al.* 1449 (MO), 8.2 (on new road, 8.6 on old road) mi. from Pan-American Highway on the El Llano–Cartí Road, *Knapp & Huft* 4421 (MO); high point of ridges S of Ipetí, 5–6 hrs. walk from Chocó village, Serranía de Maje, *Knapp et al.* 4528 (MO); along new El Llano–Cartí road, 8–12 km N of El Llano, *Nee et al.* 8769 (MO); El Llano–Cartí Road, 16 km N of

Pan Am. Highway at El Llano, *Nee & Dressler 9356* (MO), 16–18.5 km by road, *Nee & Tyson 10968* (MO); El Llano–Cartí Road, Km 10–15, *P. Maas et al. 2829* (MO); El Llano–Cartí road, 10.6 mi. from the Pan American Highway, *J. S. Miller et al. 875* (MO); El Llano–Cartí road, just S of San Blas border, *J. S. Miller et al. 1011* (MO); El Llano–Cartí road, 10 km from Inter-American Highway, *Mori & Kallunki 2299* (MO), *2305* (MO), 9.6–11 km, *Mori & Kallunki 3521* (MO), 21.1 km, *Mori & Kallunki 5112* (MO), 11–12 km, *Mori et al. 6885* (MO), 8–11 km, *Mori 7707* (MO); El Llano–Cartí Road, ca. 18 km from Pan Am Highway, *Stein 1029* (MO); El Llano–Cartí Road, 15 km above Pan-American Highway, *Systma & Sytsma 3140* (MO). **San Blas:** El Llano–Cartí Road, vicinity Nusagandí, sendero Nusagandí down to the Atlantic coast, *Croat 69256* (MO); Nusagandí, along the continental divide on the El Llano–Cartí Road, *de Nevers & Pérez 3581* (MO); Nusagandí, summit of El Llano–Cartí Road, along the first stretch of the trocha S of camp, *de Nevers & González 3641* (MO); El Llano–Cartí Road, Km 19.1, *de Nevers et al. 5010* (MO), *5876* (MO), *7343* (MO), Km 27, *de Nevers et al. 5094* (MO), Km 16.7, *de Nevers & Charnley 5903* (MO); 23–29 km from Pan-American Highway on El Llano–Cartí Road, *Knapp 1856* (MO).

Faramea guaramacalensis C. M. Taylor, sp. nov.

TYPE: Venezuela. Lara: distrito Moran, carretera desde Humacaro Alto hacia Guaito, 2200 m, 14 Nov. 1984, *H. van der Werff & R. Rivero 7890* (holotype, MO-5204020; isotypes, PORT, US, VEN). Figure 2D, E.

Haec species a *Faramea larensis* inflorescentia axillari, pedicellis longioribus atque limbo calycino brevioribus; a *F. spathacea* limbo calycino pedicellis et lobulis corollinis brevioribus distinguitur.

Shrubs and small trees to 6 m tall; stems glabrous. *Leaves* elliptic to obovate or elliptic-oblong, 4–14 × 1.5–6 cm, at apex acute with tips 5–20 mm long and usually quite slender, at base cuneate to rounded, drying papyraceous to chartaceous, glabrous on both surfaces; secondary veins 6 to 9 pairs, looping to interconnect forming a curving to rather angled submarginal vein, without domatia, adaxially venation plane or costa prominulous, abaxially costa prominent, secondary veins prominulous, and remaining venation plane to usually thickened; petioles 3–5 mm long; *stipules* glabrous, persistent, shortly united around stem, main body interpetiolar portion deltoid to broadly triangular, 3–5 mm long, abaxially smooth in basal half and costate in upper part, at apex acute, aristate, arista linear, 1–3 mm long, apparently glandular at its apex. *Inflorescences* shortly supraaxillary, produced at first subterminal node of stems, inserted 1–2 mm above node, glabrous; peduncles 1 per axil, 16–28 mm long, terminating in a single 3-flowered cyme; bracts 0.5–2 mm long, narrowly triangular to linear; pedicels 3–8 mm long; *flowers* distylous, fragrant; hypanthium narrowly turbinate to cylindrical, ca.

1.5 mm long, glabrous; *calyx* limb 0.8–1 mm long, sinuate to truncate, with 4 linear teeth ca. 0.3 mm long; *corollas* salverform to narrowly funnellform, white, glabrous externally, tubes 13–18 mm long, lobes 4, narrowly triangular to lanceolate, 7–8 mm long, acute; anthers ca. 4.5 mm long, included, in short-styled form situated just below corolla throat, in long-styled form situated just above middle of corolla tube; stigmas 2, linear, in short-styled form ca. 3.5 mm long, included, situated near middle of corolla tube, in long-styled form ca. 2.5 mm long, partially exerted. *Infructescences* similar to inflorescences or sometimes displaced to second subterminal node by subsequent stem growth; *fruits* oblate, ca. 6 × 8 mm long, glabrous, color not noted.

Habitat, distribution, and phenology. In cloud forests at 1950–2200 m in Lara, Portuguesa, and probably adjacent Trujillo states of northwestern Venezuela; collected in flower in June and November, in immature fruit in May, June, and November.

This new species is distinguished by the combination of its shortly petiolate leaves, persistent aristate stipules, axillary, few-flowered inflorescences with well-developed peduncles and pedicels, relatively short denticulate calyx limb, white corollas with well-developed tubes, oblate (but not laterally flattened) fruits, and cloud forest habitat. This species was first noticed as undescribed by J. A. Steyermark, who passed the type collection on to J. D. Dwyer, who never advanced work on it and later passed this same specimen to me (J. D. Dwyer, pers. comm.). But this species has been best documented by the work of Cuello (1996, 1999) in Guaramacal National Park, and the specific epithet refers to its occurrence here. *Faramea guaramacalensis* was treated as “*Faramea* aff. *larensis*” in the recent flora of this park (Dorr et al., 2000). Cuello’s focused floristic sampling showed strong altitudinal stratification in the vegetation of this park and the distribution of many of its plant species, including *F. guaramacalensis*.

Faramea larensis Steyermark is also found in cloud forest in northwestern Venezuela, but differs from this new species in its terminal inflorescences, stipule aristas ca. 4 mm long, pedicels 1.5–3.5 mm long, and calyx limbs 1–1.5 mm long. *Faramea larensis* is known only from a single collection with immature flowers, so the measurements provided by Steyermark represent only a minimum flower size.

In the treatment of the Rubiaceae of Venezuela (Steyermark, 1974), *Faramea guaramacalensis* will key to two different species, *F. spathacea* and *F. egregia*. *Faramea spathacea* differs from *F. guaramacalensis* in its peduncles 0–4 mm long, pedicels

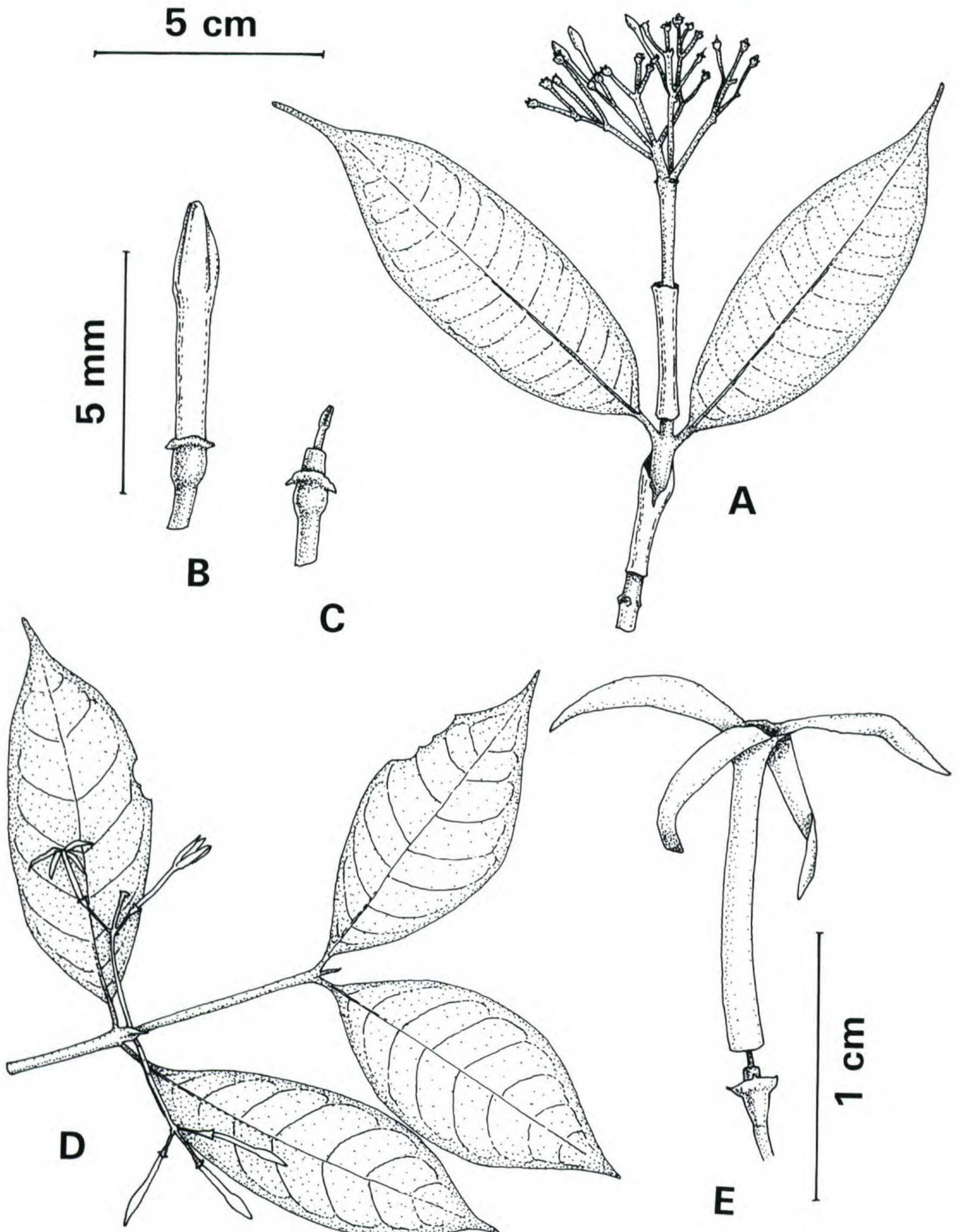


Figure 2. A–C. *Faramaea longistipula* C. M. Taylor. —A. Flowering branch. —B. Flower bud. —C. Flower shortly after corolla has fallen off. D, E. *Faramaea guaramacalensis* C. M. Taylor. —D. Flowering branch. —E. Flower, partially dissected. A, D to 5-cm scale. A, based on *Cogollo et al.* 7839; B, C, based on *Pipoly et al.* 17263; D, E, based on *van der Werff & Rivero* 7890.

10–30 mm long, calyx limbs 6–8 mm long, corolla lobes 13–20 mm long, and distribution in Venezuela at 700–1400 m; *F. egregia* differs from *F. guaramacalensis* in its solitary flowers, calyx limbs ca. 6 mm long, corolla lobes 16–30 mm long, and distribution in Guyana and adjacent southeastern Venezuela at 500–1000 m.

Paratypes. VENEZUELA. **Portuguesa:** mpio. Sucre, Parque Nacional Guaramacal, sector El Alto, límite con el Estado Trujillo, Camino Real Paramito–Batatal, 9°19–20'N, 70°05'W, *N. Cuello et al.* 1623 (PORT), 1639 (PORT), 1699 (PORT).

Faramea longistipula C. M. Taylor, sp. nov. TYPE: Colombia. Antioquia: mpio. Urrao, vereda Calles, Río Calles, Parque Nacional Natural “Las Orquídeas,” 4°36'N, 77°05'W, 1400–1500 m, 3 May 1995, *R. Fonnegra & Grupo de Palinología Semestre I-95 5496* (holotype, HUA; isotype, MO-5204022). Figure 2A–C.

Haec species a congeneris stipulis spathaceis breviter biaristatis 3.6–6.5 cm longis distinguitur.

Shrubs and small trees to 6 m tall; stems glabrous. *Leaves* elliptic-oblong to narrowly elliptic, 8–19 × 2.5–6 cm, at apex acuminate with tips 12–25 mm long and usually slender, at base cuneate to obtuse, drying papyraceous to chartaceous and often discoloured, glabrous on both surfaces; secondary veins 10 to 22 pairs, looping to interconnect forming an angled to undulate submarginal vein, without domatia, adaxially costa prominulous and remaining venation plane, abaxially costa prominent and secondary veins and reticulated higher order venation thickened to prominulous; petioles 5–12 mm long; *stipules* glabrous, united into a laterally flattened sheath, main body of sheath 3.5–6.5 cm long, at apex acute to obtuse, with aristas 2, closely set, 3.5–5 mm long, as new leaves expand sheath splitting from apex for up to 1/3 forming a spathaceous structure, eventually deciduous by fragmentation. *Inflorescences* terminal, corymbiform-rounded, 3.5–5 × 4.5–6 cm, branched to several orders, white, glabrous, subsessile and tripartite with subtending leaves often deciduous, principal axes terminating in dichotomous cymules of 3 to 5 flowers; bracts none or deltoid, to 0.5 mm long; pedicels 3–12 mm long; *flowers* with hypanthium ellipsoid to subglobose, 1–1.2 mm long, glabrous; *calyx* limb 0.3–0.5 mm long, truncate, entire to 4-denticulate, glabrous; *corolla* salverform, white to blue, externally glabrous, tube 7–9 mm long, lobes 4, narrowly triangular to narrowly lanceolate, 3–4 mm long, acute; anthers ca. 5 mm long, included, situated just above middle of corolla tube; stigmas 2, linear, ca. 1 mm long, included, situated

near base of corolla tube on style ca. 1 mm long. *Infructescences* to 5 × 8 cm, their axes appearing jointed due to internodes often becoming thickened and nodes contracted; *fruits* oblate, ca. 8 × 15 mm, laterally rather flattened, glabrous, smooth, leathery, purple.

Habitat, distribution, and phenology. In wet montane forest at 1390–1750 m in the northwestern Cordillera Occidental of the Andes; collected in flower in May, November, and December, in immature fruit in March, May, and December.

This new species is distinguished by its unusually well developed, calyptrate to spathaceous stipules; it is also distinctive in its combination of corymbiform, well-branched inflorescences, slender white to blue corollas, oblate laterally flattened fruits, and montane forest habitat. The relatively large stipules separate this species from the other Andean species of *Faramea* except *F. calyptrata* C. M. Taylor of montane southwestern Colombia and northern Ecuador; the specific epithet refers to these stipules. *Faramea calyptrata* differs from *F. longistipula* in its stipules that are apically entire or bear only 1 arista, its 5 to 10 fasciculate peduncles each producing a single flower, and its corollas with tubes 16–25 mm long. *Faramea longistipula* is one of several species of *Faramea* from western Colombia that Standley annotated with the unpublished epithet “celata.”

Paratypes. COLOMBIA. **Antioquia:** mpio. Urrao, vereda Calles, Parque Nacional Natural “Las Orquídeas,” margen derecha del Río Calles, *Cogollo et al.* 2564 (JAUM, MO), 3915 (JAUM, MO), 7435 (JAUM, MO), 7839 (JAUM, MO), *Pipoly et al.* 17263 (JAUM, MO); Alto de Palmitas, *Pipoly et al.* 17637 (JAUM, MO); Quebrada La Agudelo, *D. Cárdenas et al.* 3180 (JAUM, MO).

Faramea tamberlikiana Mueller Argoviensis subsp. **sessifolia** (P. H. Allen) C. M. Taylor, comb. et stat. nov. Basionym: *Faramea sessifolia* P. H. Allen, Rain Forests of Golfo Dulce 409. 1956. TYPE: Costa Rica. Puntarenas: Esquinas Forest, area between the Río Esquinas and Palamar, 200 ft., 22 May 1950, *P. H. Allen* 5539 (holotype, US; isotypes, F-1716255, F-1569883).

As circumscribed here, *Faramea tamberlikiana* Mueller Argoviensis is found in the western Amazon Basin of South America, throughout wet lowland Colombia including along its Pacific coast, and north into Panama and southern Costa Rica. Reproductive features are similar in plants from throughout this region, but there is notable variation in vegetative features. In particular *F. tamber-*

likiana subsp. *tamberlikiana*, found in the Amazon basin and central and eastern Colombia, has petioles 3–13 mm long, leaves with the bases acute to rounded or truncate, and calyx limbs ca. 0.2 mm long, while the allopatric subspecies *sessifolia*, found from southern Costa Rica to western Colombia, has petioles 1–5 mm long, leaves that are rounded to truncate or cordate at the base, and calyx limbs 0.5–1.5 mm long. The leaves of vegetative stems of subspecies *sessifolia* are sessile, relatively larger, cordate at the base, and markedly amplexicaul, while those of reproductive stems are usually shortly petiolate, relatively smaller, and truncate to rounded at the base, though occasional leaves of reproductive stems are similar to those of vegetative stems. In contrast, subspecies *tamberlikiana* has similar leaves on both vegetative and reproductive stems. As a species *F. sessifolia* was considered restricted to southern Costa Rica (e.g., Burger & Taylor, 1993), but as circumscribed here its range is wider.

Specimens examined. COLOMBIA. **Antioquia:** mpio. Cáceres, Kms 10–15 SE de Cáceres, sobre La Troncal de La Paz, *Callejas et al.* 5354 (HUA, MO); mpio. Tarazá, correg. El 12, vereda Banablanco, 210 km NE de Medellín, Troncal del Caribe, en la vía El 12-Barroblanco, cuenca del río Pubi, *Callejas et al.* 10876 (HUA, MO); mpio. Puerto Nare, límites con la vereda El Prodigio (mpio. San Luis), vereda Serranías, *D. Cárdenas et al.* 3017 (JAUM, MO). **Chocó:** mpio. Nuquí, correg. Termales, N of Quebrada Piedra Piedra, *Acevedo-Rodríguez et al.* 6865 (MO, US); Serranía de Baudó, along road between Las Animas and Pato on Río Pato, ca. 5 km SW of Pato, *Croat* 56086 (MO); carretera Panamericana (en construcción), adelante del Río Pató, *E. Forero et al.* 5662 (COL, MO); Guayabal (just N of Quibdó), *Juncosa et al.* 709 (NY). COSTA RICA. **Puntarenas:** Reserva Forestal Golfo Dulce, Los Mogos, Golfito, *R. Aguilar* 546 (CR, MO); along road from Panamerican Highway at Piedras Blancas to Rincón (on Osa Peninsula), 3.7 mi. W of Panamerican Highway, *Croat* 67636 (MO); Parque Nacional Corcovado, Sirena, on trail toward Laguna Corcovado ("The Swamp"), *Delprete* 5202 (CR, MO); fila before Rancho Quemado, near Rincón, Osa Peninsula, *Gentry et al.* 78652 (MO), 78684 (MO sterile); ridge between Río Riyito (valley of Laguna Chocuaco) and Quebrada Banegas, S of Cerro Rancho Quemado (ca. 7 km W of Rincón de Osa), *Grayum et al.* 7566 (MO); Reserva Forestal Golfo Dulce, Osa Peninsula, Trocha de La Tarde rd. 10 km SW of La Plana, S of Rincón de Osa, E of the Río Rincón valley, *Hammel & Robleto* 16730 (CR, MO); Osa Peninsula, trail from Rincón de Osa to Rancho Quemado, *H. Kennedy* 1949 (MO); Corcovado National Park, trail from base of hills to Los Chiles, *Liesner* 3075 (MO); Corcovado National Park, Llorona Plateau, along trail above Llorona station, *Neill* 5045 (MO); along the Camino al Pacífico, W of Rincón de Osa, Osa Peninsula, near Mile 12, *Raven* 21592 (F, MO); R.N.V.S. Golfito, Golfito, Valle de Coto Colorado, Fila La Gamba, *M. Segura* 81 (INB, MO); on road to radio and telecommunications tower, 6 km N of Golfito, *Utley & Utley* 4887 (DUKE,

MO); Estación Biológica Marengo, parte NO de la Estación, sendero camino público, Península Osa, *Zamora et al.* 1200 (CR, MO). PANAMA. **Coclé:** on the Atlantic side ca. 5 hr. walk from sawmill at El Cope, along slopes above Norte Río Blanco near small village of Caño Susio, *T. Antonio* 3623 (MO); Penonomé–Coclecito, 5.6 mi. N of Llano Grande, along Río Cascajal, 1.4 mi. N of continental divide, *Croat* 67473 (MO); area between Caño Blanco del Norte, Caño Sucio and Chorro del Río Tife, *Davidse & Hamilton* 23638 (MO); 9 km N off Llano Grande on road to Coclesito, *Hammel* 1897 (MO). **Colón:** along Portobello–Nombre de Dios road, 10 km W of Nombre de Dios, *Knapp & Mallet* 5707 (MO).

Acknowledgments. I thank R. E. Gereau for preparation of the Latin diagnoses; the curators of COL, F, HUA, JAUM, PMA, PORT, and US for access to or information about specimens, and in particular M. Correa; R. Foster, T. Wachter, and the Andrew Mellon Foundation through a grant to the Field Museum of Natural History for support for travel to that institution; O. M. Montiel and R. Magill for significant encouragement of this work; and A. Cogollo, Q. Jiménez, J. Sánchez, L. Dorr, N. Cuello, G. Aymard, and J. Dwyer for providing information.

Literature Cited

- Bawa, K. S. & J. H. Beach. 1983. Self-incompatibility systems in the Rubiaceae of a tropical lowland wet forest. *Amer. J. Bot.* 70: 1281–1288.
- Burger, W. C. & C. M. Taylor. 1993. Flora Costaricensis: Family #202. Rubiaceae. *Fieldiana, Bot. n.s.* 33: 1–333.
- Classen-Bockhoff, R. 1996. A survey of flower-like inflorescences in the Rubiaceae. *Opera Bot. Belg.* 7: 329–367.
- Cuello A., N. L. 1996. Floristic Diversity and Structure of the Montane Forests of Cruz Carrillo National Park in the Venezuelan Andes. M.S. Thesis, University of Missouri-St. Louis.
- (editor). 1999. Parque Nacional Guaramacal. UNELLEZ-Fundación Polar, Caracas.
- Dorr, L. J., B. Stergios, A. R. Smith & N. Cuello A. 2000. Catalogue of the vascular plants of Guaramacal National Park, Portuguesa and Trujillo States, Venezuela. *Contr. U.S. Natl. Herb.* 40: 1–155.
- Dwyer, J. D. 1980. Flora of Panama Part IX. Family 179. Rubiaceae. *Ann. Missouri Bot. Gard.* 67: 1–522.
- Faivre, A. E. & L. A. McDade. 2001. Population-level variation in the expression of heterostyly in three species of Rubiaceae: Does reciprocal placement of anthers and stigmas characterize heterostyly? *Amer. J. Bot.* 88: 841–853.
- Mueller, J. 1881. *Faramea*. *Fl. bras.* 6(5): 105–162.
- Robbrecht, E. 1988. Tropical Woody Rubiaceae. *Opera Bot. Belg.* 1: 1–271.
- Steyermark, J. A. 1967. *Faramea*. In: B. Maguire & Collaborators, The Botany of the Guyana Highland—Part VII. *Mem. New York Bot. Gard.* 17: 371–396.
- . 1974. *Faramea*. In: T. Lasser (editor), *Flora de Venezuela* 9(1): 935–967.
- Taylor, C. M. 1999. Rubiaceae–Coussareae. In: G. Harling & L. Andersson (editors), *Fl. Ecuador* 62: 238–307.